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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SAJOUS, WESNER	

ART UNIT	PAPER NUMBER
2676	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/623,425	CHEN ET AL.	
	Examiner	Art Unit	
	Sajous Wesner	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-10,12-18 and 20-31* is/are rejected.

7)☒ Claim(s) *4,11 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/18/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This is a first office action. Claims 1-30 are presented for examination.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 5-10, 14-18, 20-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruderlin et al. (US 20030179203).

Considering claim 1, Bruderlin discloses a computer-implemented method (200, fig. 2) for rendering a feather (see fig. 10), comprising: generating a segment of a rachis having a first barb and a second barb (e.g., generating a geometric feather having left and right vanes [see paragraphs 64-65], with the feather's vanes lined up to match the direction of the barbs [see paragraph 107]; generating first barb (e.g., a center barb 2202, fig. 22) based on a first barb length; and generating the second barb (e.g., a clump barb, 2204, fig. 22) based on a second barb length. See paragraphs 125-126.

It is to be noted that although the reference is not specific as to the rachis of the feather, and the barbs having length, the Examiner takes notice that it is an industry standard to have included rachis and barbs with lengths in the generation and rendering of a feature. For, in Bruderlin, since a feather with vanes and barbs are generated, a rachis is intrinsically included. A vane is the outer section of a rachis, and barbs

typically grown on each side of the vanes so as to keep the feather together. The rachis is the main structure of the feather. Further, since the generated feather is geometrically defined, and contains shape attributes to enable the user to adjust the surface patches on the left and right sides of the vanes of the feather (see paragraphs 65-68), it is obvious that the barbs that make up the surface of the feather will automatically be modified, hence user defined barbs length will be generated due to the modified size of the feather, which encompasses the barbs. Thus, the ordinary skilled in the art at the time the invention was made, given the teaching of Bruderlin, would be motivated to consider a feather with a segment of a rachis, and a first and a second barb with distinct lengths, in order to generate and render a feather with geometric attributes.

Re claim 2, Bruderlin discloses generating a segment is performed as a function of a rachis curve. See paragraph 65, wherein the shaft and vanes encompass the rachis of the feather.

Re claim 3, It is noted that although Bruderlin does not implicitly discloses generating a first barb is performed as a function of a first barb Curve, the Examiner takes notice that such a feature is typical in the art, for each barb in a feather is known in the art to define a Bezier curve. Hence such a feature is obvious over the feather generation of Bruderlin. See fig. 10.

Re claim 5, Bruderlin, at fig. 21 and/or fig. 22, discloses generating a polyline having a number of barb segments.

Re claim 6, Bruderlin discloses generating a number of polygons along the barb segments (e.g., generating curve or patch primitives for the surface of the feather. See paragraph 94, wherein the primitives correspond the polygons).

As per claim 7, it is noted that since in Bruderlin texture mapping is being performed on the geometric feather (see paragraph 105), Bruderlin's pipeline system 200 inherently textures each of polygon or primitive that makes up the rendered feather.

As per claim 8, Bruderlin discloses receiving an input sample feather (e.g., a reference feather) and wherein the segment of the rachis, the first barb and the second barb are [intrinsically] generated based on sample feather. See paragraphs 94 and 95, wherein the rachis and barbs are inherent components of the feather.

Regarding claim 9, Bruderlin discloses a computer-implemented method (200, fig. 2) for rendering a feather (see fig. 10). Note that since a feather is generated a rachis and left and right barbs are inherently generated (see paragraphs 64-66 and 107); generating a plurality of barb line curves extending from and along at least a portion of the rachis (as depicted in fig. 21 or 22, wherein clump 2102 corresponds to the rachis). See paragraphs 65-68.

Bruderlin is not specific as to the provision of a textured surface along the plurality of barb line curves.

However, Bruderlin suggests the use of curves to construct the surfaces of the vanes, and provides high-level user-controllable attributes to directly affect the shape of the curves and the whole feather (see paragraph 65). At paragraph 105 he suggests applying texture mapping on the geometric feather. Thus, this being the case, it would

have been obvious to the ordinary skill in the art to use pipeline system 200 Bruderlin to texture the surface along the plurality of barb line curves, for such would make up a rendered feather, hence increasing the realism of the feather when displayed.

As per claim 10, Bruderlin discloses generating a number of polygons along the barb line curves (e.g., generating curve or patch primitives for the surface of the feather. See paragraph 94, wherein the primitives correspond the polygons).

Re claim 14, Bruderlin discloses providing a left outline curve and a right outline curve (as defined by the left and right vanes with barbs), the left outline curve and right outline curve defining lengths of the barb line Curves. See paragraphs 65-68.

Re claim 15, Bruderlin discloses providing a textured surface includes coloring the textured surface based on a sample feather (see paragraph 105 in light of paragraph 94).

The invention of claim 16 contains features that are analogous to the limitations recited in combined claims 9 and 14. As the limitations of claims 9 and 14 have been found obvious over the teaching of Bruderlin, it is readily apparent that the applied prior art performs the underlying functions. As such, the limitations of claim 16 are rejected under the same rationale set forth above for claims 9 and 14. Rationale for claim 1 rejections also applies herein with respect to claim 16.

Claims 17 and 18 are rejected under the same rationale as claim 3.

Re claim 20, Bruderlin, at fig. 21 and/or fig. 22, discloses generating polylines having a number of barb segments.

Claim 21 is rejected under the same rationale as claim 6.

Claim 22 is rejected under the same rationale as claim 7.

Claim 23 is rejected under the same rationale as claim 8.

Regarding claim 24, Bruderlin discloses a computer-implemented method (200, fig. 2) for rendering a feather (see fig. 10). Note that since a feather is generated a rachis and left and right barbs are inherently generated (see paragraphs 64-66 and 107); generating a plurality of barb line curves (as depicted in fig. 21 or 22). See paragraphs 65-68.

Bruderlin is not specific as to the selectively changing the rachis, the barbs and outline curves.

However, Bruderlin suggests the use of curves to construct the surfaces of the vanes, and provides high-level user-controllable attributes to directly affect the shape of the curves and the whole feather (see paragraph 65). Thus, since the generated feather is geometrically defined, and contains shape attributes to enable the user to adjust the surface patches on the left and right sides of the vanes of the feather (see paragraphs 65-68), the rachis curve, the barb curve and outline curve will therefore be selectively modified by the user. For the shape of the feather encompasses a rachis, outline curves and barb curves. Thus, the ordinary skilled in the art at the time the invention was made, given the teaching of Bruderlin, would be motivated to consider selectively changing the rachis, the barbs and outline curves, in order to generate and render a feather with geometric attributes.

Claims 25-28 are rejected under the same rationale as claim 8. For the outline curve, the rachis curve and the barb curve are intrinsic components of the feather.

As per claims 29-31, it is noted that since Bruderlin provides a computer monitor (104, fig. 1) to facilitate the display of the geometric feather, it would be obvious for the artisan skilled in the art to have provided a window to illustrate the rachis, the barb and the outline curves, for the display of the computer generated feather encompasses the rachis curve, the barb curve and the outline curves, which are intrinsic components of the feather.

3. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruderlin et al. (US 20030179203) in view of the article assigned to Liu et al., entitled "Synthesizing Bidirectional Texture Functions for Real-World Surfaces".

Re claim 12, Bruderlin discloses providing a texture surface from a sample feather (see paragraphs 94 and 105); but Bruderlin fails to teach providing a textured surface includes modeling a bi-directional texture function from a sample.

Liu discloses providing a textured surface includes modeling a bi-directional texture function from a sample. See fig. 2 and sections 1 and 3.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Bruderlin to include the modeling of bi-directional texture functions (BTF) from a sample texture, in the same conventional manner as taught by Liu; so that BTFs can be continuously synthesized from a parse set of sample textures at any given lighting/viewing conditions.

Re claim 13, Bruderlin discloses modeling a structure of barbs and barbules of the sample feather. See paragraphs 94 and 107, wherein the barbules are noted to

represent the inherent structure defining each barb of the feather, as is well known in the art.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 8-9, 16, 24 are rejected under 35 U.S.C. 102(anticipated) as being anticipated by the article assigned to Franco et al. entitles "Modeling the Structure of Feathers".

Considering claims 1-3, Franco discloses a computer-implemented method for rendering a feather (see items b and d of fig. 1), comprising: generating a segment of a rachis having a first barb and a second barb; generating the first barb based on a first barb length; and generating the second barb based on a second barb length, wherein the generating a segment is performed as a function of a rachis curve, and the generating a first barb is performed as a function of a first barb Curve. See section 2 of the article including table 1.

Re claim 8, Franco discloses receiving an input sample feather (e.g., the hand drawn feather, item a or c of fig. 1) and wherein the segment of the rachis, the first barb and the second barb are generated based on sample feather. See sections 2 and 3 of the article.

Re claim 9, Franco discloses a computer-implemented method for rendering a feather (see items b and d of fig. 1), comprising: generating a rachis; generating a plurality of barb line curves extending from and along at least a portion of the rachis; and providing a textured surface along the plurality of barb line curves. See sections 1-2 of the article including table 1.

As per claim 16, Franco discloses a computer-implemented method for rendering a feather (see items b and d of fig. 1), comprising: defining a rachis curve; defining a left outline curve and a right outline curve; generating left barbs from the rachis curve to the left outline curve; and generating right barbs from the rachis curve to the right outline curve. See sections 1-2 of the article including table 1.

As per claim 24, Franco discloses a computer-implemented method for rendering a feather (see items b and d of fig. 1), comprising: selectively changing the rachis, the barbs and outline curves. See sections 1-2 of the article including table 1.

Allowable Subject Matter

6. Claims 4, 11, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, because the prior art fail to teach randomly rotating at least some the left barbs and right barbs to simulate an external force placed on the first barb (as recited in claims 4 and 11 and 19).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tani (US 4418 103) discloses generating a feather having barbs with lengths that is connected to a rachis. See col. 1, lines 35-50.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sajous Wesner whose telephone number is 571-272-7791. The examiner can normally be reached on M-T, first Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wesner Sajous -WS- (PSA EXAMINER)
10/15/05